

Population and distribution of wolf in the world

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Abstract This paper introduced the past and current situation about distribution and population of wolf (*Canis lupus*) in different countries. Wolf once distributed widely in the world. Its distribution area has diminished greatly as their living conditions are destroyed, together with persecution from humans. The overall population of wolf is also declining. In some countries, wolves are endangered or even extinct. Now some countries have placed the wolf on the national list of protected animals. Alaska of the United States and Canada are the widely distributed areas of wolves in the world.

Key words: wolf, *Canis lupus*, distribution, population, habit protection

General distribution

Originally, wolf (*Canis lupus*) distributed in most areas 20°N (Mech 1974) except for tropical rain forest and desert. In a time wolf distributed in the Europe-Asia continent of the northern sphere and the North American continent except for few islands (including Saudi Arabia Peninsula and Japan). In North America, the distribution area of wolves ever spreads to the South of Mexico adjoin to the Tropic of cancer (Goldman 1997).

The distribution areas of wolves have decreased greatly so far, especially in West Europe and North America. In the Northern Mexico, there are a few distribution places of wolves. The whole distribution of wolves in North America retreats to 45°N Latitude. In U.S., wolves mostly distribute in Minnesota of Lake Superior area and the North of Wisconsin (Mech 1970). In Canada wolves distribute in a large area. In West Europe and North Europe, wolves have extinct in many countries except for the following countries: Norway, Sweden, Finland, Turkey, Greek, Italy, Spain and Portugal. In East Europe: Poland, Slovak, Hungary, Romania, the former Yugoslavia (etc.), wolves distribute widely. Wolves distribute in a large area in Asia, the former USSR, China, Korea, South Korea, India, Pakistan, Afghanistan, Jordan, Lebanon, Syria, Iran, Iraq, Saudi Arabia, etc.

Wolves ever distributed in every province in China, The specimens of wolves are acquired in other places except for Taiwan, Hainan and other island nearby. However, at present, wolves mainly distribute in northeast, northwest, Inner Mongolia and Tibet areas. In Huabei plain, middle and lower reaches

areas of Changjiang Rive, it is difficult to find wolf's traces (Ma 1986).

The wolf specialists of IUCN (the International Union for the Conservation of Nature and Natural Resources) have made statistics about wolf. The present situations about the distribution of wolf are as follows:

In the United States

In Alaska the distribution of the wolf is the widest, with a population of 5 000-6 500 at most according to the survey of the 1980. Up to 1990, the number has increased to 7 000. There are about 2 000 in Minnesota, about 40 in Wisconsin, 30 in Michigan (Dale 1994; The International Wolf Center 1993). In Alaska, wolves' distributions still occupy about 85% of the state, nearly all of their historic range (Mech 1970, 1995; Cahalare 1994). Over past decades, Alaska ended wolf-control programs of statewide government. It tightened restrictions on killing wolves by banning poisons and aerial hunting, ending bouncing payments and regulating wolf hunting and trapping. Congress set aside large national parks in the state where wolves are completely protected. The increase of the wolf population brings many kinds of abuse. The ADF&G (the Alaska Department of Fish and Game) noted that in some important areas the number of prey or game animals had dropped considerably.

Wildlife studies showed that wolves and grizzly bears were causing most of the mortality. The Delta Caribou herd, for example, decreased from about 10 700 in 1989 to 5 000-6 000 in 1995 (Mendelssohn 1998). The ADF&G then set up the Alaska Wolf Management Planning Team and work out a series of measures, preparing to decrease the wolf population to a proper level. While the public heard that part of the plan involved shooting wolves from aircraft,

people did not learn about the careful planning process or the increased protection for wolves that was also part of the plan (Hendrickson 1985). In the end, the planners were unable to persuade the public that wolves' population over the whole state would remain stable or increasing, rather than be extinct. Alaska's 1993 wolf management plan was defeated finally.

In Canada

Canada is one of the world's largest populations of wolves. Scientists refer to Canada as the world's largest reservoir of wolves." Wolves were once common through out Canada, its Arctic's island, and Vancouver Island (Carbyn 1983, 1994). However, humans and their activities--agriculture, general persecution, poorly regulated wildlife harvesting laws, and a general apathy towards preservation--prevailed, resulting in a reduction in the range and numbers of this species. Although information on the exact number is lacking, those who lived in frontier areas and in areas of farmland close to wilderness believe that the reduction was quite substantiate these impressions. In the past, wolves were killed by hunting and trapping. In some territories and provinces, wolves were large-scaly poisoned by the government in the 1950s and 1960s. Trappers are allowed to take any number of wolves. Research on alternative ways of trapping wolves is being conducted by the Canadian Fur Institute, in anticipation of the European Economic communities likely import ban by 1995 on fur that is being caught in traps. Today, the trend has been reversed, and wolves occupy some 86% of their former Canadian range, all of its good wolf habitat. The current population of wolf in Canada is 50 000 to 60 000 animals, with estimates based on density calculations and distribution maps from the various jurisdictions and from researchers who have studied wolves in a long term (Carbyn 1994). Wildlife managers reported the numbers of wolves remained stable or increasing in most territories and province. The number of wolves trapped in Canada has dropped dramatically in the last decade, and the trend continues. In 1983 approximately 3 738 wolves were trapped and in 1990 approximately 2 285, a 40% decline. The decrease results directly from the decline in trappers, and socioeconomic shifts in northern communities are making trapping less important. The steepest declines in wolf trapping occurred in Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. Ontario, a province with a large urban population, experienced the greatest decide in wolf harvest (70%), from about 1 300 wolves in 1983 to about 350 in 1990. In addition, Canada wolf management does not only involve killing wolves, but also involves

educating the public about the wolf's status in nature, preserving wolf habitat and wolf populations, restoring wolves to suitable wilderness areas, and reducing conflicts between wolves and humans (Keith 1998). The wolf is no longer the Red Riding Hood fable that has been the bane of the wolf 's existence for many countries. Currently, the wolf has the reverse image: championed as a symbol of wilderness, it receives profound support within Canadian. In Canada, wolves are protected at least to some extent in areas that total approximately 218 000 km², about 2.5% of the total land mass (84 170 square miles, an area about the size of Utah or half of Spain).

In Mexico

Wolves in Mexico are the subspecies in the southeast areas, which concentrate in the narrow areas to the Southwest of Mexico (Ames 1995). The number of wolves stands at about 50 (Packard 1992).

In Romania

There are about 2 500 wolves mostly distributed in the middle area of Carpathian Mountains (Hell 1992). In addition, 50 wolves live in the forest of the low areas of southeast. In cold winter, wolves migrate from Ukraine to the low areas of the south of Romania. The wolves in the area prey at wild pig and Red deer. Wolf-protecting laws are not enacted in Romania. The wolf skin is worthy a lot in those areas, which allow people to trap wolves at any time, but poisoning measures are not applied. Recently, the government began to research how many wolves should be left on the condition that they would be good for ungulates groups (mostly red deer) to live forever. The area, wolves were shot and trapped, which the density of wolves deceased. Consequently, the number of horses and deer doubled rapidly. Accordingly to the governmental statistics, about 250 are killed every year (accounting for 1/10 of the total). Five dollars will be awarded to the person who kills a wolf.

In Hungarian

In history, wolf inhabited the North of Hungary. In 1907-1908, wolves were killed. At present, only in the East of Hungary can we find wolf. According to trap and observance notes, the number of wolves in 1920-1930 were the highest, in 1940-1950, the lowest. During 1960-1980, the numbers of wolves increased. In the past few years, a small wolf's group has been rebuilt by man-breeding. The forest comprises chiefly of *Larix gmelini*, with immature forest

graying luxuriantly, which provide a good habitat (Rayes 1991). This small group can better group quality mingling with the wolves of surrounding countries, for example: the group in Slovak. In Hungary, wolves prey at red deer, wild goat and cattle, but they are protected so much. However, once the wolves do damage to surroundings, people are allowed to trap them.

In Czechoslovakia

Wolves nearly extinct in all the areas in Slovak before World War II, but their numbers rose in World War II. After the war, hunters controlled the quantity of wolves by trapping and poisoning a lot. National park was built in 1975, and wolves began to be protected, regulating that every year during the six months from March the first to September the fifth, wolves are forbidden to be trapped. Currently, wolves in Slovak have developed into a group including 300 wolves that is the biggest group since 200 years ago (Voskar 1993.). The most difficult problem for protecting wolves lies in the change of people's view on wolves. Wolves in Slovak prey at red deer, wild pig and wild goat. In the area of Alps pasture, wolves will be trapped as long as they are on appearance. Wolves cannot exist in the West of Slovak without forest and with a large population. In non-protective areas, trapping wolves is awarded bonuses and government offer salaries equivalent for the one of three weeks to wolf-hunting workers. At present, there are no managerial plans. One hundred and twenty wolves are trapped every year, which is too much. Wolves infected with hydrophobia can infect people, which happens times and again. Therefore they are killed bulk.

In Yugoslavia

2 000 wolves live in the middle mountain area, and there are hydrophobia in Slovenia and the South of Yugoslavia. But wolves groups have been under control. A research project is carrying out near Sarajevo in Bosnia, but the plan was put off for the year after year's civil war in the past few years. Wolf's death rate is very high, but because the research work is suspended, the motion of the wolf population is almost unknown.

The number of wolves in each country of Mid-East (Duden 1996) as follows: Egypt (Sinai), about 30; Arab peninsula, about 300-600; Jordan, 200; Israel, 100-150; Lebanon, 10; Syria, 200-500; Iran, no more than 1 000; Afghanistan, about 1 000; whereas the number of the wolves is unknown in Iraq and Turkey (Mendelsohn 1998.).

In the former U.S.S.R

The former USSR has wide territories, supported more wolves than any other country. In the 20th century, wolves, with the development of the economy, expand their range (Bibikov 1990). Their number peaked at more than 150 000 after World War II, in 1946, 62 600 wolves were killed in the USSR, including 40 000 in Russia alone. By the end of the 1960s, the wolf population decreased to 60 000-70 000. However, the crisis of the Soviet economy resulted in a new increase that could be monitored through the 1980s. The present status of the population is unknown. Since winter field census of wolves is no longer carried out (Bibikov 1993).

In India

Two subspecies of gray wolves, the Tibetan wolf (*Canis lupus chanco*) and the Indian wolves (*Canis lupus pallipes*) inhabit the Indian subcontinent (Jbala 1993). The former is found in India only in the northern high-altitude Himalayas, and the latter is in a denizen of the arid and semi-arid grasslands and shrub land. The number of wolves currently surviving in India is roughly estimated at 1 000 to 2 000--fewer than the current number of tigers in India! Yet the wolf, a major predator, and a flagship species of the grassland-shrub land habitats, have received little local conservation attention. The Indian wolf is listed as endangered species of animals (Shahi 1993). The wolf is legally protected. However, legal enforcement is extremely difficult. In most of India, The wolf subsists on small livestock, primarily goats and sheep. Death of a single animal to wolf perdition is a significant economic loss to the poor pastoral community that barely ekes out a living from these drought-prone regions. In several areas, wolves often are shot or poisoned, or their dens are smoked and the pups killed. Currently, Velavadar National Park is the only one wolf reserve located in the western region of India.

In China

China is also one of the countries with wolves. But nonsystematic investigation of wolf population has been made, so it is difficult to offer an exact number. Recently the investigation of wolf's population in Inner Mongolia shows that there are no more than 2,000. Currently, the regions that have the most wolves are still Northwest, Inner Mongolia, Northeast areas and a part of regions in Xinjiang (Gao 1987). But because of the serious damage and manmade hunting for a long time, the distribution areas of the wolves in China have greatly decreased. In the past,

the wolves scattered all over the country, however, now they only scatter to the north of 30°N, and only in little population. Wolves in Jiangzhe areas are nearly extinct. In the North forest and grass field, the groups of wolves are also rare to be seen, only occasionally. Unfortunately there is still no special nature reserve for wolf.

Declaration of principles for wolf conservation was adopted at the meeting in Stockholm, Sweden on 5-7 September 1973, the first international meeting on the conservation of the wolf, it said: wolf, as a specie, have high social behavior, and it plays important role in natural ecosystem, should be protected. The European Wolf Network founded, which included 27 nations. It work out the study and protection plan of wolf, holding a meeting every a certain period, publishing some materials concerning wolf population motion and cooperating to develop the thorough study of wolf.

Suggestion of protection measures

1) To carry out scientific study, we must make investigation on wolf population number in all of the countries and make subspecies assorting. Scientific evaluation for the good and bad effects of wolf should be made so as to take a series of measures.

2) To strengthen legal management, don't permit to hunt wolf without any restriction, and restrict the population number of wolf, all this must be done on the base of the evaluation of experts and must be done with organization.

3) To strengthen international co-operation, particularly cooperate with the countries neighboring to our countries such as the Russia, Mongolia, India, Afghanistan, Pakistan and etc.

References

Ames, N. 1995. The Mexican wolf-prospects for recovery. Proc. Int. Wolf Symp.; Nat. Geogr. Soc. Washington, D. C., p 78~84

Bergerud, A.T.W.W. and Smider, B. 1983. The role of wolf predation in limiting a moose population. J. wildl. Manage., **47**(4): 977~988

Bibikov, D.I.; Flonov, K.P. 1990. The wolf in preserves in the former USSR. Piroda, 2

Bibikov D. 1993. Wolves in Russia INTERNATIONAL WOLF, p18~19

Burkholder, B.L. 1959, Movements and behavior of a wolf pack in Alaska. J. wildl. Manage., **23**(1): 1-11

Cahalare, V.H. 1994. A preliminary study of distribution and numbers of cougar, grizzly and wolf in North America N. Y. Zool. Soc., 12

Carbyn L. N. 1994. Canadian's 50 000 Wolves. INTERNATIONAL WOLF, 3

Carbyn, L.N. 1983. Wolf predation on elk in Riding Mountain National Park, Manitoba. J. wildl. Manage., **47**(4): 963~976

Dale, B., Adams, L.G., et al. 1994. Functional responses of wolves preying on barren-ground caribou in a multiple prey ecosystem. J. Anim. Ecol., **63**: 644-652

Duden, S.S. 1996. The wolves of Mideast. INTERNATIONAL WOLF, 13~14

Fuller, T.K. 1989. Population dynamics of wolves in north-central Minnesota. Wildl. Monogr., **105**:1~41

Gao Yutang. 1987. Chinese Fauna (Carnivore). Beijing: Science and Technology Press. 178~182

Goldman, E.A. 1997. The wolves of North America, part II classification of wolves. The Amaer wildl. Insit., Washington

Hell, P., Paule, L. 1992. Taxonomic data on the wolf (*Canis lupus*). from the Romanian Carpathians. Folia Zool. Bmo., **31**:255~270

Hendrickson, J., Robinson, W.L., Mech, L.D. 1985. Status of the wolf in Michigan. Am. Midl. Nat., **94**: 226~232

Jbala, Y.V. 1993. The Indian Wolf. INTERNATIONAL WOLF, 16~17

Keith, L.B. 1997. Population dynamics of wolves. in (eds L.N. Carbyn): Wolves in Canada and Alaska. Can. Wildl. Serv. Rep. Ser. 45. p 135

Ma Yiqing. 1986. Mammals of Heilongjiang Province. Harbin: Heilongjiang Scientific Press. 141~149.

McBride, R.T. 1990. The Mexican Wolf (*Canis lupus bailey*): A historical Review and observation on its status and distribution. U.S. Fish and Wildlife Serv. Rept. Endangered Species Report 8; p38

Mech, L.D. 1970. The Wolf: The Ecology and Behavior of an Endangered Species. The America Museum of Natural History

Mech L.D. 1995. The status of the wolf in the United States. Wildl.Soc. Bull., **23**: 85~87

Mendelssohn, H. 1998. Status of the wolf in the middle east. Acta Zool. Fenn., **174**: 279~280

Packard, J. 1992. Population regulation in wolves, In(eds Eastman, D.S.; Peek, J.M): Symposium on Natural Regulation of Wildlife Populations. Sept, 1983; 151~174

Rayes, R.D., Baer, A.M and Larsen, D.G. 1991. Population dynamics and prey relations of an exploited and recovery wolf population in Southern Yukon. Yukon Fish and wildl. Branch Final report TR-91-1

Shahi, S.P. 1993. Status of gray (*Canis lupus pallipes*, Sykes) in India. Acta Zool.Fennica, **184**: 283~286

The International Wolf Center. 1993. Alaska Wolf Plan Defeated by communication Failures INTERNATIONAL WOLF, 11~13

Voskar J. 1993. Present problem of wolf preservation in Czechoslovakia, Acta Zool. Fennica, **184**:287~288